National Aeronautics and
Space Administration

Office of Inspector General
Headquarters
Washington, D.C. 20546-0001

Reply to Attn of: Office of Inspector General

December 7, 1998

The Honorable Richard K. Armey
House Majority Leader
House of Representatives
Washington, DC 20515-6502

Dear Mr. Armey:

Enclosed is my response to your request dated August 5, 1998, concerning what my office perceives to be the 10 most serious management challenges for NASA.

The Agency's space and aeronautics missions pose bold challenges which will be achieved by a workforce of civil servants and contractors whose size, deployment, roles and relation-ships continue to adjust to budgetary and personnel constraints. As a result, NASA must reengineer its ways of doing business, which includes the effective application of technology. However, cutting-edge technology brings with it new and costly challenges. For example, NASA, like other agencies, is devoting considerable resources to identifying and remedying the Year 2000 computer problem. It also is working on a strategy for Internet security consistent with NASA's mission and operational needs.

The NASA OIG has a positive role in helping the Agency meet its goals. Our published reports, ongoing projects, and fiscal year workplan are available through the OIG Internet homepage at http://www.hq.nasa.gov/office/oig/hq.

Should you have any questions or need additional information, please call me on (202) 358-1220. We look forward to working with you and your staff.

Sincerely,

Roberta L. Gross
Inspector General

Enclosure

cc:
The Honorable Dan Burton, Chairman
House Committee on Government Reform
and Oversight

TOP 10 CHALLENGES: SAFETY AND MISSION ASSURANCE

BACKGROUND

The NASA Administrator has made safety the Agency's highest priority which employees are expected to incorporate into all phases of their activities. Because of risk to human life, the highest priority of the Shuttle program remains the safe launch, operation and return of the orbiter and crew. The Agency will continue its pursuit of new technologies that reduce costs and increase safety and reliability of current and future generation launch vehicles.

FUTURE CHALLENGES

Key is:

- Assuring appropriate level of training for staff who conduct safety reviews and evaluations
- Maintaining adequate safety reporting systems
- Ensuring compliance with safety standards and regulations
- Ensuring product safety and reliability
- Developing appropriate safety planning mechanisms

Prior OIG work related to these challenges is briefly described in *Table 1 – Safety and Mission Assurance Prior Work* on pages 2 through 4

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 2 – Safety and Mission Assurance Planned Work* on page 4.

- Evaluate NASA's Emergency Preparedness Program
- Review the Agency's safety evaluation process
- Ascertain documentation for and approval of safety waivers and deviations on Shuttle flights (Waivers are safety variations that authorize departure from a specific safety requirement and, thus, an increased level of risk. Deviations are safety variations that authorize departure from a particular safety requirement where the alternate means provide an equal or greater level of security).

TABLE 1 – SAFETY AND MISSION ASSURANCE PRIOR WORK

Program Area	Reports	Results
INSPECTIONS	Letter to the Honorable James Sensenbrenner on NASA's Participation in the Russian Mir Space Program (August 29, 1997)	We reported Shuttle-Mir safety challenges including: fire, decompression and loss of attitude control. Over-sight into Mir operations was limited because of NASA's "guest" status rather than partner status. Also Russia did not provide timely information and ground support communication was inadequate. Safety impact of stress resulted from conditions aboard the Mir (high levels of potentially toxic substances; high temperatures; demands on time for maintenance activities; lack of communication).
INSPECTIONS	Timing of Independent Team Meetings and Communications for Shuttle-Mir Rendezvous and Docking Missions and International Space Station Missions Operational Readiness Task Forces (November 20, 1997)	Fact gathering and recommendations to the Administrator on flight related issues needed to occur earlier in the process to maximize usefulness.
INSPECTIONS	Shuttle-Mir Rendezvous and Docking Missions and International Space Station Operational Task Forces (February 17, 1998)	Task Force should expand the breadth of expertise of its membership and include members free of potential conflicts or perceived biases because overly close association with NASA. Perception of bias may discourage reporting of safety concerns to the Task Forces.
INSPECTIONS	X-33 Program Security Assessment (G-98-009)	Assessment of the security for the X-33 prototype reusable launch vehicle revealed areas for improvement.
AUDITS	Cassini Program Management (JP-96-001)	While the Cassini program had adequate procedures and practices in place, we found several areas that could pose a launch risk. For example, neither NASA nor the Air Force had used the rocket motor, environmental groups might attempt to stop the launch, and a limited launch window existed. Management concurred with the report's conclusions and updated the risk areas.

TABLE 1 – SAFETY AND MISSION ASSURANCE PRIOR WORK (CONTINUED)

Program Area	Report	Results
AUDITS	Space Station Configuration Management (IG-98-032)	Functional and configuration audit processes for the Space Station program were effective in meeting program needs.
AUDITS	Space Station Quality Assurance (A-HA-97-058)	We found no significant systemic weaknesses during our survey work at Space Station's prime contractor facilities in Huntsville, Alabama.
AUDITS	Space Station Spares Availability (M-IG-98-002)	NASA management agreed to continue monitoring spares availability and to take actions needed to provide support for development and utilization of the Space Station.
AUDITS	Major Shuttle Hardware and Software Procurements (A-HA-97-033)	NASA is implementing shuttle upgrades that improve safety, support the program manifest, improve mission supportability, and reduce costs. Also, the program budgeted sufficient funds for Phase I and II upgrades. However, NASA cannot implement major Phase III and IV upgrades unless Congress approves additional funding or the transfer of funds from other NASA programs.
AUDITS	Russian Participation in the International Space Station (A-HA-97-057)	NASA's controls of Russian deliverables and payments appear adequate. While planned Russian contributions may not meet NASA's revised Space Station schedule, Russian funding problems are widely known. NASA has no control over Russia's internal funding for the Space Station.
INSPECTIONS	NASA Aerospace Safety Advisory Panel (IG-96-005)	The OIG found a continuing need for the panel. However, some interviewees stated the panel members do not have adequate time or expertise to thoroughly study issues. We also found that panel members were frequently re-appointed to multiple terms. We recommended NASA assist the panel in locating other qualified consultants and limit terms.

TABLE 1 – SAFETY AND MISSION ASSURANCE PRIOR WORK (CONTINUED)

Program Area	Reports	Results
INSPECTIONS	Safety Reporting System (Management Memorandum)	We recommended process changes and technical modifications to upgrade and modernize the NASA Safety Reporting System.
INSPECTIONS	Lewis Spacecraft Mishap (Management Memorandum)	The Lewis Spacecraft Mishap Investigation Board report needed improvement. The process could be improved by avoiding Board membership for individuals with the appearance of bias or conflict of interest; increasing range of expertise of Board; and expanding scope of interviews.

TABLE 2 – SAFETY AND MISSION ASSURANCE PLANNED WORK

Program Area	Activity	Focus
AUDITS	Evaluate NASA's Emergency Preparedness Program	NASA's planning strategies (particularly in light of Year 2000 issues). Adequacy of ongoing plan.
	Review the Agency's safety evaluation process	Adequacy of safety standards and procedures. Compliance with established practices. Implementation of corrective actions identified in prior safety evaluations.
	Ascertain appropriateness of documentation for and approval of safety waivers and deviations on Shuttle flights	Length of time a deviation has been in place and level of safety achieved. Degree of risk associated with existing level or waivers and deviations. Effect that improving or reducing the number of waivers and deviations has on NASA's risk.

TOP 10 CHALLENGES: PROCUREMENT

BACKGROUND

In accomplishing its programs, NASA spends the greatest part of its resources through contracts for a wide variety of services, support, and capital assets. In an environment of budget reductions and downsizing, NASA is attempting to significantly improve the way it relates to its contractors and the rules governing their interactions. As a result, acquisition reform balanced against the need for appropriate monitoring and insight is a key issue for NASA.

A recent General Accounting Office (GAO) report identified NASA contract management as a continuing area of high risk. GAO cited the Agency's delay in implementing the Integrated Financial Management Information System (IFMIS), lack of formal evaluation requirements for field center procurement activities, and delay in implementation of the NASA procurement metrics as challenges to NASA's ability to assess and oversee its procurements activities.

FUTURE CHALLENGES

Key is:

- Ensuring proper level of staffing in the current down-sizing environment to perform contracting requirements
- Providing sufficient controls over and monitoring of both prime and subcontractors
- Adequately training procurement personnel so they can effectively implement new initiatives (e.g., performance-based contracting, electronic commerce, reengineered grants processing) while maintaining existing workloads
- Completing the IFMS
- Completing formal evaluation requirements
- Implementing procurement metrics

Prior OIG work related to these challenges is briefly described in *Table 3 – Procurement Prior Work* on pages 7 through 9.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 4 – Procurement Planned Work* beginning on pages 9 through 10.

- Evaluate NASA's peer review process
- Review the Headquarters Service Contract Policy
- Examine leases for inflated costs
- Identify research misconduct
- Identify contract and subcontract irregularities
- Examine contractor compliance with product specification requirements
- Evaluate use of electronic commerce
- Review contractors' use of consultant services to augment downsized staffs
- Evaluate sole source procurement process
- Evaluate performance on support services contracts
- Review progress in implementing performance-based contracting and metrics
- Evaluate the effectiveness of NASA's price analyses
- Review market research and commercial product procurement process required by the FAR
- Evaluate NASA's management of undefinitized contractual actions
- Evaluate Health and Human Services Audit Service provided to NASA
- Evaluate NASA subcontract management and oversight
- Evaluate Earned Value Management (EVM) program at NASA
- Review market research and the commercial product procurement process
- Evaluate NASA's management of undefinitized contractual actions
- Review NASA's follow-up system for DCAA reports and recommendations

TABLE 3 - PROCUREMENT PRIOR WORK

Program Area	Reports	Results
AUDITS	Contractor Facility Leases (IG-98-02) Contractor Facility Leases at Lewis Research Center (LeRC) (IG-97-009) Contractor Facility Leases at Lockheed Credit Union Occupancy (IG-97-037)	NASA's management of facility leasing can be improved. A significant number of contractor facilities were not effectively used and some contractor leases were not correctly classified as capital leases. Excessive lease costs existed on two specific leases at LeRC, and occupancy cost charges for a credit union at Kennedy Space Center were questionable. NASA initiated actions on all issues identified.
AUDITS	NASA's International Merchant Purchase Authorization Card Program (IG-98-011)	NASA's credit card program was generally effective; however, improvements in property accountability, split purchases, cards used by someone other than the cardholder, and purchase and payment controls were necessary. Management took corrective actions.
AUDITS	Jet Propulsion Laboratory (JPL) Contract Issues: NASA Costs Paid to Rehired Former Audit JPL Employees (IG-98-027) Caltech Government Billings Transferred to the JPL (JP-97-012) Early Retirement Option Plan at the JPL (JP-96-004) Travel Policies, Procedures and Practices at the JPL (JP-95-005) JPL Employee Charges at the Caltech Campus (JP-95-003)	A series of reviews found that NASA's federally funded research and development contractor had adequate documented policies and procedures, but failed to follow them, resulting in increased costs to NASA. Such incidences have occurred in payments for travel, early retirement, billings, rehired former employees, and employee charges for materials purchased off the Laboratory.
AUDITS	Risks Associated with Ames Research Center Acquisition of Military Family Housing (IG-98-022)	A cost-benefit study to support NASA's acquisition of housing units did not fully identify and consider all costs associated with the housing. In addition, all legal and environmental issues had not been resolved. NASA initiated actions to address the above issues.

TABLE 3 – PROCUREMENT PRIOR WORK (CONTINUED)

Program Area	Reports	Results
AUDITS	NASA General-Purpose Vehicles Acquisition and Use (IG-98-035)	Four NASA Centers reviewed had excessive vehicles. Two Centers also continued to purchase vehicles, rather than lease vehicles through the General Services Administration. NASA is evaluating its requirements to take action to eliminate under-utilized vehicles and convert to leasing where beneficial to NASA.
AUDITS	Tracking and Data Relay Satellite System (TDRSS) Single Access System Reimbursable Rate (IG-98-008)	NASA is understating the TDRSS single access service reimbursable rate for services provided to other U.S. government customers. NASA agreed to reexamine both rates and policies.
AUDITS	Single-Source Suppliers for Critical Items (IG-98-030)	NASA has not adequately developed analyses of critical, single-source suppliers of industrial materials. Management agreed to change existing requirements for any identified process change that provides operational benefit or reduces program costs or schedule risk.
AUDITS	Commercial Use of the Santa Susana Field Laboratory (IG-98-038)	NASA did not receive approximately $3.1 million in rent from a contractor's commercial use of the Laboratory, contrary to the FAR. NASA agreed to charge the contractor rent for its future commercial use, and evaluate recovery of rent for past commercial use.
PARTNERSHIPS	NASA Single Process Initiative Block Change Process Implementation (P&A-98-002)	NASA must address inconsistent Center implementation, minimal cost savings, and inadequate resources for staffing and implementing the initiative. NASA is working to improve the benefits realized by NASA from the single process initiative.
PARTNERSHIPS	NASA's Cooperative Agreements with Large Commercial Firms (P&A-97-001)	Cooperative agreements appear to have achieved NASA's goals; however, improvements can be made in resource sharing contributions, reporting requirements, and other administrative matters.

TABLE 3 - PROCUREMENT PRIOR WORK (CONTINUED)

Program Area	Reports	Results
INSPECTIONS	Assessment of Property Disposal Outsourcing (G-98-008)	The excess property outsourcing pilot program at MSFC did not comply with Federal Property Management Regulations. NASA initiated actions to improve the program.
INSPECTIONS	Shuttle-Mir Rendezvous and Docking Missions and International Station Readiness Task Forces (G-98-003)	The effectiveness of external task forces related to Mir and the International Space Station could be improved. We recommended restructuring the process used by the task forces to obtain contract support.

TABLE 4 - PROCUREMENT PLANNED WORK

Program Area	Activity	Focus
INSPECTIONS	Evaluate NASA's peer review process	Conformance with professional standards. Identification of best practices.
	Review the Headquarters Service Contract Policy	Contract scope in changed NASA environment. Compliance with policy.
INVESTIGATIONS	Examine inflated lease costs	Improperly executed leases.
	Identify research misconduct	Grants and contracts for work not performed. Duplicate funding and subcontracting.
	Identify contract and subcontract irregularities	Bid rigging, market allocation, or collusion to fix prices
	Examine contractor compliance with product specification requirements	Relationship between product defects and testing procedures.

TABLE 4 - PROCUREMENT PLANNED WORK (CONTINUED)

Program Area	Activity	Focus
AUDITS	Evaluate use of electronic commerce to streamline procurement	Procedural guidance. Effectiveness of electronic procurement techniques. Efficiency of electronic catalogs.
	Review contractors' use of consultant services to augment downsized staffs	Management controls and, allowability and reasonableness costs.
	Evaluate sole source procurement process	Justification and compliance with regulations.
	Evaluate performance on support services contracts	Oversight of support services contractors. Reliability of costs.
	Review progress in implementing performance-based contracting and metrics	Procedural guidance. Conversion of existing contracts. Award of new contracts. Effectiveness of award and incentive fees.
	Evaluate the effectiveness of NASA's price analyses	Appropriateness of analysis. Sufficiency of detailed pricing evidence. Documentation.
	Review of Health and Human Services (HHS) audit services for NASA	Audit the HHS services and related billings to ensure that they are reasonable and accurate.
	Subcontract management	Selected prime contract award and management of subcontracts.
	Review of EVM Program	The extent and effectiveness of NASA's EVM implementation.
	Review market research and commercial product procurement process	Adequacy of research and pricing; and sufficiency of procurement instrument.
	Evaluate NASA's management of undefinitized contractual actions	Urgency and necessity of the action. Change orders compliance with regulations. Accuracy and completeness of data.
	NASA's Followup System for DCAA Reports and Recommendations	NASA's follow-up process for DCAA reports and recommenda-tions. Compliance with OMB and NASA requirements.

TOP 10 CHALLENGES: INTERNATIONAL SPACE STATION

BACKGROUND

The launch of the Zarya control module in November 1998 began the assembly phase of the International Space Station (ISS). The mission of the ISS is to enable long-term exploration of space. It will afford scientists, engineers, and entrepreneurs a platform on which to perform complex, long-duration, and replicable experiments in the unique environment of space.

Cost overruns and schedule delays related to Russia's precarious political situation continue. Also, Boeing, NASA's prime contractor, continues to experience cost overruns and schedule delays.

FUTURE CHALLENGES

Key is:

- Managing the political, financial, technical and safety challenges presented by an international partnership
- Developing contingency plans to mitigate the impact of a partner's inability to meet delivery schedules
- Overcoming technical challenges inherent in manufacturing, assembling, and testing complex hardware and software components provided by different nations and integrated in space

Prior OIG work related to these challenges is briefly described in *Table 5 – International Space Station Prior Work* on page 12.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 6 – International Space Station Planned Work* on page 13.

- Review cooperation and interaction between NASA and the Department of Health and Human Services regarding health and psychological studies
- Review security planning for the X-38 Crew Return Vehicle
- Review of Lessons Learned Phase I to Phase II
- Evaluate the planning process for the Interim Control Module
- Evaluate the effectiveness of Space Station Payload Office
- Evaluate spare parts costs
- Evaluate NASA's contingency planning for international partners
- Review approval of baseline adjustment of $600 million to Space Station prime contract

TABLE 5 - INTERNATIONAL SPACE STATION PRIOR WORK

Program Area	Reports	Results
AUDITS	Space Station Performance Measurement Cost Data (IG-98-002)	The Space Station contractor did not report accurate estimate at completion. Instead, the contractor reduced major subcontractor's estimates so it could report a smaller cost overrun. We recommended NASA obtain better support of contractor cost data. Management concurred.
AUDITS	Space Station Change Order Process (IG-97-015)	The Space Station program had almost $400 million in undefinitized changes that were over 180 days old. We recommended that responsibility for timely definitization of contract changes be assigned to a program employee. Management has implemented corrective action.
AUDITS	Space Station Facilities Requirements (JS-96-006)	A Space Station contractor charged the program $2.9 million annually for idle capacity. We recommended the Contracting Officer (CO) ensure future costs are reasonable. Management has taken corrective action.
AUDITS	Space Station Prime Contractor Performance Management (JS-96-004)	$127 million of cost overruns were omitted from the contractor's completion estimate. Consequently, future funding requirements for the ISS were not adequately portrayed. We recommended the CO require the contractor to provide better analysis and reporting of cost data.
AUDITS	Boeing Indirect Cost Allocations to Space Station Contract (JS-96-001)	NASA reimbursed a contractor for indirect costs on the Space Station contract that did not benefit NASA, potentially resulting in $33 million in excess charges over the life of the contract... We recommended the CO ensure an equitable allocation of costs to the contract. Management has taken steps to reduce the allocation.
INSPECTIONS	Enhancing Compatibility for Long-Duration Space Flight Crews (G-98-005)	To improve safety and mission success of long-duration flights, NASA needs to identify astronauts best suited for long-duration travel, provide psychological evaluations of astronauts, and improve training. Management partially concurred with our recommendations.

TABLE 6 - INTERNATIONAL SPACE STATION PLANNED WORK

Program Area	Activity	Focus
INSPECTIONS	Review security planning for the X-38 Crew Return Vehicle	Security requirements in the design. Application of security lessons learned.
	Review cooperation and interaction between NASA and the Department of Health and Human Services regarding health and psychological studies	Infrastructure that promotes meaningful dialogue. Applicability of previous studies. Studies related to astronaut fitness testing.
	Review of Lessons Learned Phase I to Phase II (in process)	Agency action to apply lessons learned during Phase I (Shuttle-Mir) to Phases II and III.
AUDITS	Evaluate the planning process for the Interim Control Module (ICM)	Options considered. Cost, including impact of changing configurations and function, and impact on staff and other projects.
	Evaluate the effectiveness of Space Station Payload Office	Delivery schedule and cost of payload hardware. Integration of requirements. Criteria established regarding customers, payloads, reimbursement, security and payload delivery to and return from the ISS.
	Evaluate spare parts costs	Reasonableness of pricing. Justification for identified unusual spare parts cost growth. Internal controls in the acquisition process.
	Evaluation of NASA's contingency planning for international partners (in process)	Contingency plans for major risk scenarios associated with International Partners.
	Review approval of baseline adjustment of $600 million to the Space Station prime contract	Propriety of baseline adjustment; evaluation of corresponding adjustments to the contract.

TOP 10 CHALLENGES: YEAR 2000 PROBLEM

BACKGROUND

Current and evolving NASA programs rely heavily on information technology to collect, analyze, disseminate, and store large amounts of administrative, scientific, and engineering information. For many computer systems, the change of date from 1999 to 2000 and beyond has the potential to affect the integrity of data and the continuity of processing capabilities.

The Y2K conversion program is a key challenge to NASA's CIO community. NASA has identified the Y2K problem as a significant area of management concern in the annual Federal Managers' Financial Integrity Act (FMFIA) Report. In our audits, we have found gaps in NASA's guidance on cost estimation, documentation of its Year 2000 (Y2K) efforts, and its identification of critical systems.

FUTURE CHALLENGES

Key is:

- Accurately assessing systems vulnerabilities, i.e., identify core business and mission areas and processes; inventory and analyze systems supporting these areas; and prioritize conversion replacements
- Developing contingency plans to handle anticipated problems
- Converting, replacing or eliminating selected platforms, applications, databases, and utilities
- Testing, verifying, and validating converted or replaced platforms, applications, databases, utilities, and interfaces in an operational environment
- Assuring all information technology equipment solicitations include a Y2K compliance clause
- Disseminating NASA's expectations forY2K compliance to all entities who conduct business with the Agency

Prior OIG work related to these challenges is briefly described in *Table 7 – Year 2000 Problem Prior Work* on page 15.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 8 – Year 2000 Problem Planned Work* on page 15.

- Evaluate disaster recovery plans for information technology systems
- Assess actions designed to avoid processing problems caused by Y2K problem
- Evaluate assessment of Y2K date conversion problem

TABLE 7 - YEAR 2000 PROBLEM PRIOR WORK*

Program Area	Reports	Results
AUDITS	Year 2000 Data Conversion – Assessment Phase (IG-98-040)	Guidance on cost estimation was inadequate. Adequate support for Y2K costs estimates was not documented. Furthermore, documentation did not always exist to support the manner in which assessments for Y2K compliance were conducted and conclusions reached. We recommended that NASA issue guidance on cost estimation and documentation. NASA disagreed that insufficient guidance was provided. We also recommended that documentation of inventory assessments be improved, which NASA agreed to do.

***Note:** We have three ongoing Y2K audits that we will be issuing in the near future.

- A-HA-98-032 – Year 2000 Date Conversion – Assessment (Continuation)
- A-HA-98-044 – Year 2000 Date Conversion – Renovation & Validation
- A-HA-99-008 – Year 2000 Date Conversion – Implementation

TABLE 8 - YEAR 2000 PROBLEM PLANNED WORK

Program Area	Activity	Focus
AUDITS	Evaluate disaster recovery plans for information technology systems	System configurations relative to security and data integrity impacting the Shuttle, Deep Space Network, Launch Processing, Hubble Telescope, and others.
	Assess actions designed to avoid processing problems caused by Y2K date problem	Consolidated systems operations at the NASA ADP Consolidation Center
	Continue assessment of Y2K date conversion problems	Adequacy of Agency effort to assess magnitude. Remediation efforts.

TOP 10 CHALLENGES: INFORMATION TECHNOLOGY

BACKGROUND

The Clinger-Cohen Act of 1996 increased the responsibility, authority, and accountability of individual Federal agencies for information technology management. It vested the Agency Chief Information Officer with responsibilities for improving the management of and accountability for the Agency's Information Technology (IT) program. NASA's missions and programs depend on properly managed information resources. Consequently, NASA is a significant investor in IT ($1.6 billion in Fiscal Year 1997). To streamline operations, NASA is further consolidating and outsourcing various IT operations, including local area networks and desktop computers, mid-range computing, administrative mainframe computer operations, and supercomputing.

The OIG has established a Computer Crimes Unit that investigates felonious intrusions into NASA's systems. Our Inspections Unit also is proactive in selected security issue reviews. The Audit program has dedicated resources to assessing NASA's IT program. Based on the information from the three program areas, we have briefed NASA on its serious network vulnerabilities. For the last 2 years, the OIG has recommended that NASA designate information technology security (ITS) as a high-risk area in the annual Federal Manager's Financial Integrity Act (FMFIA) Report. We based our recommendation on our concerns about the fragmentation of the ITS program, the lack of policies and guidance, network physical and system security weaknesses, the lack of properly trained personnel, and lack of threat analysis. Instead, NASA characterizes ITS only as a "significant concern." In May 1998, the Acting Deputy Administrator, acknowledging significant ITS issues raised by the OIG, requested a review of NASA's ITS program. The final report recognized numerous deficiencies. The Agency is committed to implementing a wide range of improvements.

FUTURE CHALLENGES

Key is:

- Ensuring data security, integrity and application controls
- Protecting operations and communications with spacecraft
- Monitoring and evaluating the streamlining of operations through outsourcing information technology operations for cost efficiencies, dependency on the vendor for technological direction, vulnerability of strategic information to outsiders, and dependency on the viability of the vendor

Prior OIG work related to these challenges is briefly described in *Table 9 – Information Technology Prior Work* on pages 18 through 21.

OIG ACTIVITIES

Details of the following OIG planned activities are contained in *Table 10 – Information Technology Planned Work* on pages 21 through 22.

- Evaluate UNIX Operating System Security and Integrity
- Evaluate MVS OS/390 Operating System Integrity and Security
- Evaluate Security Software Implementation of RACF and ACF2 (external security software which provides logical security to the computing environment)
- Evaluate internal control issues associated with the Checkout and Launch Control System
- Evaluate guidance and program controls on information technology systems development
- Review compliance with IT laws, regulations, policies, and guidelines
- Evaluate implementation of the Clinger-Cohen Act
- Review of public key infrastructure strategies to provide encryption and identity assurance

TABLE 9 - INFORMATION TECHNOLOGY PRIOR WORK

Program Area	Reports	Results
INSPECTIONS	Lewis Security Management Inspection (G-98-007)	NASA management concurred with most recommendations we made to improve physical and information security weaknesses at Lewis Research Center. Management has already implemented many of the recommendations and is actively addressing others.
INSPECTIONS	X-33 Program Security Assessment (G-98-009)	The OIG assessed the security frame-work of the Cooperative Agreement between NASA, the Lockheed-Martin Skunk Works, and several other partners to launch a prototype reusable launch vehicle. We made five recommendations aimed at improving security for ground and flight operations. NASA management concurred in three recommendations and is considering the other two.
INSPECTIONS	Dryden Flight Research Center Network Intrusion – Lessons Learned (G-99-002)	We highlighted prudent steps that Dryden took overcoming an unauthorized network intrusion. We shared this report with NASA computer and security officials to share lessons learned from the Dryden experience.
AUDITS	Off-Site Use of NASA Computer Resources (IG-97-025)	NASA could improve productivity through increased use of software license agreements permitting NASA employees to install widely used software on their personally-owned computers for work-related use. NASA initiated responsive corrective actions.
AUDITS	Application of OMB Circular A-76 to Desktop Outsourcing (IG-98-001)	NASA had not fully satisfied the cost comparison requirements of OMB Circular A-76, *Performance of Commercial Activities*, relative to the Agency's desktop computer outsourcing initiative. NASA took actions that satisfied the prerequisites for exemption from A-76 cost comparison requirements.

TABLE 9 - INFORMATION TECHNOLOGY PRIOR WORK (CONTINUED)

Program Area	Reports	Results
AUDITS	Consolidation Decision for Secure Supercomputers (IG-98-020)	Cost-benefit analysis prepared by NASA's Consolidated Supercomputing Management Office (CoSMO) did not adequately support its decision to relocate secure supercomputing from the Langley Research Center to the Naval Oceanograhic Office at the Stennis Space Center. The report recommended that the CoSMO Director use only current, accurate, complete, and adequately documented data in its consolidation decisions. NASA concurred with the recommendation..
AUDITS	Improved Controls Needed Over NASA's Super-computing Inventory (IG-98-021)	NASA's CoSMO did not have an accurate inventory of NASA's supercomputers and supercomputing time purchased. NASA initiated responsive corrective actions.
AUDITS	Outsourcing of Desktop Computers (IG-98-029)	NASA had not ensured the adequacy or consistency of cost data for determining the type and extent of outsourcing services to be acquired. NASA initiated action to improve the cost data.
AUDITS	Information Technology Capital Planning and Invest-ment Control (IG-98-034)	The NASA information technology (IT) investment process does not satisfy Clinger-Cohen Act and OMB Circular A-130, *Management of Federal Information Resources*, requirements for post-implementation reviews of major, new IT investments. NASA initiated process improve-ments which should satisfy the IT post-implementation review requirements.
AUDITS	Data Center General controls at Langley Research Center (LaRC) (IG-97-035)	System access privileges were not being removed in a timely manner. Physical access privileges to the data center were not reviewed and revalidated. Computer security plans were not prepared and system security reviews had not been performed. Based on our recommendations, LaRC corrected these problems.

TABLE 9 - INFORMATION TECHNOLOGY PRIOR WORK (CONTINUED)

Program Area	Reports	Results
AUDITS	Data Center General Controls at Marshall Space Flight Center (MSFC) (IG-97-039)	We found control weaknesses associated with the mainframe data center's physical security, environmental security, technical standards, computer security administration, and software change management. Based on our recommendations, MSFC corrected the weaknesses.
AUDITS	Physical Security at Ames Research Center (ARC's) Numerical Aerospace Simulation (NAS) Facility (IG-97-030)	The NAS computing facility did not have adequate backup or contingency procedures to deal with physical access control system failures. ARC corrected the problem.
AUDITS	Data Center General Controls at Johnson Space Center (JSC) (IG-98-005)	We found that physical access controls to the Shuttle Software Production Facility needed improvement. Additionally, the facility did not have an uninterruptable power supply (UPS) as a defense against power problems. JSC corrected the physical access problem and agreed to conduct a feasibility study and cost/benefit on the UPS.
AUDITS	Data Center General Controls at Goddard Space Flight Center (GSFC) (IG-98-006)	Physical access controls associated with the Hubble Telescope Data Operations Center (HTDOC) and the Hubble Telescope Servicing and Maintenance System facility (SAMS) were inadequate. Additionally, computer risk management plans had not been conducted as required. GSFC corrected these deficiencies.
AUDITS	Data Center General Controls at Jet Propulsion Laboratory (JPL) (IG-98-009)	Computer security implementation plans and reviews had not been developed or conducted for JPL's Institutional Business Systems (IBS) as required by JPL policy. Additionally, physical access controls to the IBS data center were in need of improvement. JPL corrected these deficiencies.
AUDITS	Data Center General Controls at Kennedy Space Center (KSC) (IG-98-018)	Procedures for monitoring unauthorized access attempts to the Shuttle Processing Data Management System were inadequate. KSC took corrective action.

TABLE 9 - INFORMATION TECHNOLOGY PRIOR WORK (CONTINUED)

Program Area	Reports	Results
AUDITS	Data Center General Controls at Lewis Research Center (LeRC) (IG-98-039)	The physical access control system used to protect LeRC's Research Analysis Center had not been certified as meeting security requirements. Physical access procedures to the facility were not adequate. LeRC is currently addressing these issues.
AUDITS	Disaster Recovery Planning at Goddard Space Flight Center (GSFC) (IG-98-036)	The Solar Heliospheric Observatory Mission Operations Center did not have computer contingency capabilities in place in the event of a disaster. Additionally, contingency plans for a data center associated with the Tropical Rainfall Measurement Mission were incomplete. Finally, computer risk assessments did not analyze the potential effects of losses caused by disasters. GSFC agreed to implement corrective actions by March 1999.

TABLE 10 - INFORMATION TECHNOLOGY PLANNED WORK

Program Area	Activity	Focus
AUDITS	Review UNIX Operating System Security and Integrity	Determination of whether the UNIX operating system environment has been implemented and configured to provide for an appropriate level of security and integrity in the following environments: (1) Numerical Aerodynamic Simulation, (2) MASS Storage, (3) Mission Operations and Data Processing Systems, (4) Shuttle Processing Data Management System, (5) New Business Systems, and (6) Deep Space Network.
	Review MVS/ESA OS/390 Operating System Integrity and Security	Determination of whether the operating system environments for the Shuttle Software Production facility and the NASA ADP Consolidation Center at Marshall Space Flight Center have been implemented to provide for an appropriate level of security and integrity.
	Review Security Software Implementation RACF and ACF2	Determination of whether security software has been implemented to provide an appropriate level of security in NASA computing environments.

Table 10 - Information Technology Planned Work* (Continued)

Program Area	Activity	Focus
AUDITS	Review the Checkout and Launch Control System, a launch processing system support under contract	Specific control areas: (1) Project management; (2) Systems requirements definitions for real-time processing, the business and information network, the Shuttle data center, and simulation systems requirements; (3) Security architecture and requirements; and (4) Testing and implementation of application and system software.
	Review of the implementation of the Clinger-Cohen Act	Determine whether NASA has: clearly and effectively established the role and responsibilities of the CIO for operational IT requirements and IT research and development; implemented adequate procedures and practices to address the issues raised in the August 1996 GAO report, including taking steps to improve the CIO's visibility and control of IT issues; implemented adequate IT acquisition and security procedures, and established appropriate IT performance measures.

***Note – Reports in Progress:**

1. Disaster Recovery audits of major NASA computing systems:

- A-HA-98-011 – JPL's Telecommunications and Mission Operations Directorate
- A-HA-98-038 – ARC's Numerical Aerospace Simulation Facility
- A-HA-98-013 – JSC's Shuttle Software Production Facility
- A-HA-98-016 – KSC's Shuttle Processing Data Management Systems

2. Review of NASA's proposed use of a single vendor for its public key infrastructure

TOP 10 CHALLENGES: INTEGRATED FINANCIAL MANAGEMENT PROJECT OR INTEGRATED FINANCIAL MANAGEMENT INFORMATION SYSTEM

BACKGROUND

NASA's financial management environment comprised of decentralized, non-integrated systems has been identified by the Agency as a significant area of concern in its FY 1998 Federal Managers' Financial Integrity Report. To remedy this situation, NASA will implement the Integrated Financial Management Project (IFMP), an Agencywide, fully integrated, transaction-driven financial management system intended to provide for full-cost accounting and other budget information. The Agency intends to use a Commercial-Off-The-Shelf (COTS) software system to configure the IFMP.

We continue to have serious concerns about delays in the delivery of the product, disputes about the scope of the deliverables, and the costs associated with running parallel systems until the IFMP is fully implemented.

FUTURE CHALLENGES

Key is:

- Monitoring contractor performance for timely delivery of goods and services
- Ensuring adequate integration and testing
- Ensuring Center data conversion activities are effectively controlled
- Developing and deploying an appropriate security architecture for the IFMP

Prior OIG work related to these challenges is briefly described in *Table 11 – IFMP IFMIS Prior Work* on page 24.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 12 – IFMP IFMIS Planned Work* on page 25.

- Continue participation in the Security and Internal Control Working Group (SICWG), consisting of the Offices of Chief Financial Officer, Chief Information Officer, and OIG. The purpose of this group is to periodically assess the IFMP approach to security and internal controls
- Audit of the contractor's performance on IFMP

TABLE 11 - IFMP IFMIS PRIOR WORK

Program Area	Reports	Results
AUDITS	Early Phases of NASA's Integrated Financial Management Project (IFMP) (IG-97-001)	NASA did not perform adequate risk analysis as part of the requirements definition, did not adequately evaluate alternatives for meeting its requirements, and did not prepare a realistic cost estimate and implementation schedule. Management eventually performed risk analyses, and continues to do so to ensure that necessary security and management controls are included as part of the contract's requirements. Management revised its cost estimates and delivery schedule as it identified additional risk areas.
AUDITS	IFMP Review of Technical and Procurement Require-ments of Request for Proposals (RFP) (Management Letter M-HA-96-005)	Based on our recommendations, NASA incorporated several technical requirements into the RFP in the areas of security capabilities, contingency recovery, backups, and audit trails.
AUDITS	Observations Regarding the IFMP Time and Attendance Module (Management Letter M-IG-97-011)	NASA evaluated similar time and attendance systems in use at several Federal agencies and private companies to identify best practices that could be applied at NASA. Also, NASA started a security risk analysis to assess the need for electronic signatures in the planned time and attendance system.
AUDITS	NASA's IFMP Time and Attendance/Labor Distribution Module (IG-98-004)	NASA concurred with our recommendation to develop a policy and assess the risks associated with the planned deployment of the IFMP Time and Attendance module through the World Wide Web. NASA also began to develop necessary management controls for several high-risk areas that we identified in the planned module (modifying and certifying data, prior period adjustments, and access to personnel and payroll data).

TABLE 12 – IFMP IFMIS PLANNED WORK

Program Area	Activity	Focus
AUDITS	Participation in the Security and Internal Control Working Group	Effectiveness of Center data conversion activities. NASA security architecture. Testing procedures.
	Audit of the Contractor's Performance on IFMP (in process)	The IFMP contractor did not fulfill its agreement to deliver a fully integrated management system by July 1, 1999. This delay will cost NASA over $49 million. We will examine factors contributing to schedule delays and cost overruns.

TOP 10 CHALLENGES: LAUNCH VEHICLES

BACKGROUND

NASA uses two types of launch vehicles, the Expendable Launch Vehicle (ELV) and the Reusable Launch Vehicle (RLV). The ELV's do not carry people and are disposable. ELV's are used to carry satellites and exploratory mission components into space, such as the Cassini and Mars Surveyor. NASA depends upon commercial sector suppliers for the ELV.

The RLV ferries people and cargo between the Earth and space. The Space Shuttle is NASA's current RLV. The Agency has signed cooperative agreements with four industry partners for the design and development of technology demonstrators leading to the next generation RLV. The goal of the RLV program is a substantial reduction in the cost of sending cargo to low-Earth orbit. Current RLV costs significantly impact NASA's budget and the commercial growth of the aerospace sector.

FUTURE CHALLENGES

Key is:

- Assuring the availability of small ELV's to ensure schedule milestones and cost effectiveness of NASA missions, particularly launches for NASA's Offices of Earth Sciences and Space Science, "smaller, faster, cheaper, better" satellites
- Evaluating whether NASA's providing the majority of developmental funds and assigning technology rights to its industry partners in the development of the new RLV's is in the best interest of the Government
- Establishing and monitoring surveillance plans for all major functions of the Space Shuttle operations contract
- Ensuring that plans are in place and are being effectively implemented to address Shuttle systems obsolescence, logistics support, technical/safety upgrades, and funding
- Closely monitoring Space Station hardware delivery plans and initiate prompt corrective actions to preclude slips in the launch schedule

Prior OIG work related to these challenges is briefly described *Table 13 – Launch Vehicles Prior Work* on page 27.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 14 – Launch Vehicles Planned Work* on page 28.

- Continue to review the X-33 RLV cooperative agreement
- Evaluate of the effectiveness of NASA's Surveillance of the Space Flight Operations Contract
- Review the ELV program
- Evaluate the integration and coordination of NASA's multiple efforts in developing a next generation launch vehicle

TABLE 13 – LAUNCH VEHICLES PRIOR WORK

Program Area	Reports	Results
AUDITS	Reusable Launch Vehicle-Survey of X-33 Task Agreements (IG-97-018)	The OIG review found that the X-33 partner needs to develop and implement systems for monitoring and tracking cost, schedule and technical performance. The Agency concurred and began corrective action.
AUDITS	Reusable Launch Vehicle Program (IG-97-019)	NASA must continue its efforts to obtain Congressional approval of a waiver of indemnification for its private sector RLV partners. The Agency took appropriate steps to rectify this condition.
AUDITS	Privatization of NASA Sounding Rocket Program (IG-97-020)	OIG review of Agency plan to reduce infrastructure costs by privatizing the Sounding Rocket Program at the Wallops facility was not supported by a cost comparison or program impact analyses. The Agency agreed with the finding and intends to implement both the comparison and analyses before making a final decision.
AUDITS	Follow-up Audit on Orbiter Maintenance Down Periods (IG-98-016)	NASA could save $7.6 million per OMDP by performing maintenance at the KSC, but would incur significant risk. The Agency agreed to reevaluate where OMDPs are performed after the ISS is complete and there exists a less aggressive Shuttle Manifest.
AUDITS	Single Source Suppliers of Critical Items (IG-98-030)	The Space Shuttle Program Office has not developed adequate analyses for critical, single-source production and logistics suppliers. Management is taking corrective action.

TABLE 14 – LAUNCH VEHICLES PLANNED WORK

Program Area	Activity	Focus
AUDITS	Review the X-33 RLV cooperative agreement	Assignment of roles and responsibilities to the partners. Consistency with congressional guidance and submission to Congress. NASA's rights to technology. Appropriateness of this type of procurement instrument.
	Evaluate the effectiveness of NASA's Surveillance of the Space Flight Operations Contract	Validation of contractor performance by NASA's surveillance methods.
	Review the ELV program	Process for securing launch services and the planning interface between the science programs and ELV procurers and providers.
	Evaluate the integration and coordination of NASA's multiple efforts in developing a next generation launch vehicle	Effectiveness and efficiency of activities. Duplication of effort. Strategy for development of the vehicle. Procedures for data and technology exchange.

TOP 10 CHALLENGES: INTERNATIONAL AGREEMENTS

BACKGROUND

One of the goals of the National Space Policy is to promote international cooperative activities that are in the national interest. The National Aeronautics and Space Act of 1958 gave NASA statutory authority to enter into binding agreements with foreign entities. In carrying out its missions and in furtherance of the National Space Policy, NASA now has approximately 3,000 international agreements. These agreements span every NASA Enterprise and involve numerous programs and projects—the most notable being the International Space Station Program.

FUTURE CHALLENGES

Key considerations with the use of international agreements are:

- Program and project vulnerability to schedule delays and cost overruns that require diplomatic rather than contractual solutions
- Security controls on technology that impacts national security
- Controls to assure the quality and timeliness of the goods and services provided
- Mechanisms to assure a balance between program needs and national considerations
- Plans with specific critical paths and planned alternative courses of action to maintain program/project continuity

Prior OIG work related to these challenges is briefly described in *Table 15 – International Agreements Prior Work* on page 30.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 16 – International Agreements Planned Work* on page 31.

- Detect and investigate improper disclosure of advanced technology, intellectual property, and proprietary data
- Review NASA's management of its international agreements
- Continued reviews of critical Space Station international activity

TABLE 15 – INTERNATIONAL AGREEMENTS PRIOR WORK

Program Area	Reports	Results
AUDITS	Russian Involvement in the International Space Station (ISS) Program (JS-96-007)	The OIG reinforced GAO and Congressional concerns regarding Russia as a partner in the ISS because of cost and schedule impacts affecting all ISS partners. The Agency continued assessing various options while coordinating with partners.
AUDITS	Audit of NASA's Moscow Liaison Office (IG-97-033)	NASA agreed to implement better management controls of its Moscow Liaison Office that supports NASA personnel on temporary duty travel to Russia. Some of the efforts included strengthening controls over travel to Russia; acquisition of support resources such as housing, vehicles, and equipment; and securing equipment.
INSPECTIONS	Assessment of NASA's Financial Assistance to Foreign Visitors	In evaluating support of Cosmonauts flying on U.S. missions pursuant to agreements between NASA and the Russian Space Agency (RSA), we recommended, among other matters, that NASA factor payments by the foreign governments when calculating compensation by NASA (management disagreed). NASA did agree that the foreign visitor bank accounts should not be held jointly with civil servants.
INSPECTIONS	Response to Honorable James Sensenbrenner (related to internal controls for funding Russian work on the ISS). (February 9, 1998)	We found adequate internal controls by NASA for its funding of Russian ISS work. However, we could not track payments to the RSA (or the Gagarin Cosmonaut Training Center) because we do not have access to records. We also had limited investigative authority to determine whether NASA money was illegally diverted for private Russian residences not related to the Russian-U.S. ISS partnership.

TABLE 16 – INTERNATIONAL AGREEMENTS PLANNED WORK

Program Area	Activity	Focus
AUDITS, INSPECTIONS, INVESTIGATIONS	Detect and investigate improper disclosure of advanced technology, intellectual property, and proprietary data	Electronic pirating of proprietary technological information. Target individuals and groups that launch denial of service attacks against or copy, remove, or corrupt data in NASA information systems.
AUDITS	Review NASA's management of its international agreements	NASA's management of international agreements (equitable foreign contributions, proper clearances for foreign personnel, controls over technical data, proper execution of reimbursable agreements, accuracy of recording costs for reimbursable agreements).

TOP 10 CHALLENGES: EARTH SCIENCE

BACKGROUND

Space provides a unique vantage point from which to observe the total Earth system and the effects of integrated natural and human-induced changes on the global environment. Earth Science is an area of research that will yield new knowledge and tools for weather forecasting, agriculture, urban and land use planning, and other areas of economic and environmental impact. NASA has established three Earth Science goals: (1) expand scientific knowledge of the Earth system, (2) disseminate information about the Earth system, and (3) enable the productive use in the public and private sector of the science and technology gained. To attain its goals, NASA promotes extensive international collaboration and cooperation with other Federal agencies and the commercial sector. The expected benefits from NASA's partnerships include: (1) contributions to national and international assessments of the environment, (2) strengthening environmental education and public awareness, and (3) developing advanced technologies that improve scientific investigations and that can be transferred to the private industry.

FUTURE CHALLENGES

Key is:

- Effectively archiving, using, and distributing mission information captured and processed by the Earth Observing Systems Data and Information System (EOSDIS)
- Assuring accessibility and affordability of EOSDIS information to a broad spectrum of environmental decision makers, resource managers, commercial firms, social scientists and the general academic community, educators, state and local government, or the public at large
- Assuring the availability of affordable and reliable launch vehicles for Earth Science satellites and instruments

Prior OIG work related to these challenges is briefly described in *Table 17 – Earth Science Prior Work* on page 33.

OIG ACTIVITIES

Details of the following planned OIG activities are contained in *Table 18 – Earth Science Planned Work* on page 34.

- Evaluate NASA's Commercial Remote Sensing Program Office
- Review of the EOSDIS Core System contract cost and schedule concerns
- Evaluate administration of the contract for EOS spacecraft
- Evaluate the adequacy of launch services provided for Earth Science missions
- Assess the effectiveness of NASA's National Oceanographic Partnership Program, which has annual reporting requirements to Congress

TABLE 17 – EARTH SCIENCE PRIOR WORK

Program Area	Reports	Results
AUDITS	Earth Observing System Data and Information System Federation Plan (IG-98-002)	NASA did not perform a cost benefit analysis prior to initiating the pilot program to broaden participation in the distribution of EOSDIS information products through a federation of partners. The Agency concurred with our recommendation to conduct the analysis before making a decision regarding moving to a federated plan.
AUDITS	NASA's Plans to Successfully Achieve the Earth Observing System Scientific Objectives (IG-98-010)	Our audit disclosed that budget cuts would affect NASA's ability to achieve its original EOS Program goals. The Agency partially concurred with our recommendation to reevaluate the EOS goals when it addresses the Earth Science Enterprise's overall science requirements.
AUDITS	Dissemination of Earth Science Program Data and Information (IG-98-013)	EOS information was not reaching four of the five intended user groups: (1) Education, (2) Public Sector, (3) Technology, and (4) Commercial. NASA began corrective actions to ensure these four groups as well as the Scientific Users have access.
AUDITS	Management Controls in Earth Systems Sciences Building Contract (IG-98-015)	We found that NASA misused $385,000 of research and development funds for construction (construction of facilities funds should have been used). NASA corrected the mistake.
AUDITS	Earth Science Commercial Data Buy Program (IG-98-025)	One of ten contracts awarded for Phase I of this program duplicated an existing NASA capability to access the same data through current Agency agreements. Cost projections show that NASA could unnecessarily spend an additional $576,000 during Phase II. We recommended that NASA not award a Phase II contract. Management concurred and NASA will not pursue a Phase II contract.
PARTNERSHIPS	Review of the NASA/Commerce Agreement and Management of the Polar-orbiting Operational Environmental Satellite (POES) Program P&A-97-002	Represents a successful partnership between Department of Commerce and NASA that benefits from close coordination at the working level and long-range acquisition planning. We identified $26.9 million of over-estimating the program budget; potential savings of $43 million by obtaining a launch service commitment; and approximately $34,000 of available award fees were inappropriately added to the award rollover pool. Management has taken responsive actions to most of our recommendations.

TABLE 18 – EARTH SCIENCE PLANNED WORK

Program Area	Activity	Focus
AUDITS	Evaluate NASA's Commercial Remote Sensing Program Office	Costs incurred as a result of funding the same product or service under multiple commercial remote sensing programs and projects.
	Review of the EOSDIS Core System contract cost and schedule concerns	Cause of the continued contract cost and schedule problems.
	Evaluate administration of the contract for EOS spacecraft	Schedule and costs. Adequacy of quality control. Award fee determinations. Monitoring of contractor performance.
	Evaluate the adequacy of launch services provided for Earth Science missions	Timeliness of launches. Delays of Earth Science missions resulting from launch services and the effects of such delays.
PARTNERSHIPS	Assess the effectiveness of NASA's National Oceanographic Partnership Program, which has annual reporting requirements to Congress.	Program relationship to Earth Science program. Compliance with reporting requirements and validation of those activities reported.
INVESTIGATIONS	Partnership with state, local and federal law enforcement agencies targeting environmental crimes.	Application of NASA's remote sensing technology to detect illegal environmental activity (e.g., illegal dumping of hazardous materials in oceans, bays, and rivers).

TOP 10 CHALLENGES: ENVIRONMENTAL ISSUES

BACKGROUND

Years of operations and research activities have left NASA with major environmental cleanup issues. NASA recognized the existence of several significant environmental issues in the annual Federal Managers' Financial Integrity Act Report, including identifying responsible parties and negotiating cleanup cost sharing agreements, and financing the closure of Plum Brook nuclear reactors.

FUTURE CHALLENGES

Key is:

- Prioritizing and addressing environmental obligations
- Developing consistent procedures under an Agencywide policy
- Negotiating cost-sharing agreements for environmental cleanup with previous Government and private sector tenants that are also responsible parties

Prior OIG work related to these challenges is briefly described in
Table 19 - Environmental Issues Prior Work on pages 36 through 37.

OIG ACTIVITIES

Details of the following planned activities are contained in *Table 20 – Environmental Issues Planned Work* on page 37.

- Review compliance with the National Environmental Policy Act
- Review NASA's controls over the sale of hazardous materials to the public
- Evaluate recycling and waste collection efforts at facilities where NASA shares the site with other Federal and non-Federal agencies
- Explore the use of satellite technology to detect environmental crime

TABLE 19 – ENVIRONMENTAL ISSUES PRIOR WORK

Program Area	Reports	Results
AUDITS	Cost Sharing for Santa Susana Field Laboratory Cleanup Activities (IG-98-024)	Rocketdyne contaminated portions of the SSFL during the performance of past Air Force contracts. NASA has not negotiated cost sharing agreements with the responsible parties, and may have overpaid $16.4 million in remediation costs. Rocketdyne may also have overcharged NASA $4.7 million in preventative costs through potential CAS non-compliant allocation practices. NASA could continue to over pay $13.7 million annually. NASA has initiated corrective actions.
AUDITS	Kennedy Space Center's Recycling Efforts (IG-98-017)	In evaluating KSC's efforts to maximize recycling, we found that the Center's annual progress reports for recycling goals and objectives contained inaccurate and inconsistent data, preventing reasonable measurements of program accomplishments. In addition, KSC lacked procedures to retain proceeds from its recycling program, which could be used to promote the Center's recycling goals and objectives. KSC concurred with our recommendations and implemented corrective actions.
AUDITS	Cost Sharing for Cleanup Activities at the Jet Propulsion Laboratory (IG-97-024)	Caltech, NASA's prime contractor at JPL, contaminated surrounding ground-water sources during the performance of past Army contacts. NASA had not negotiated cost sharing agreements and would have paid $114 million to cleanup JPL, the majority of which is attributable to other parties. NASA is currently negotiating cost sharing agreements...
AUDITS	Status of Plum Brook Station Nuclear Reactors – LeRC (IG-97-038)	NASA had chosen to maintain the Plum Brook reactors in a safe-storage condition instead of decommissioning them, as recommended by expert studies. We found that NASA could save about $5.5 billion if it were to begin decommissioning now rather than in 2017, based on the avoidance of annual maintenance costs and escalating costs of radioactive waste disposal. NASA concurred with our recommendations and is identifying its best option for decommissioning. Management has been meeting regularly with the Nuclear Regulatory Commission to develop strategies.

TABLE 19 – ENVIRONMENTAL ISSUES PRIOR WORK (CONTINUED)

Program Area	Reports	Results
AUDITS	Lewis Research Center's Hazardous Waste Manifest Process (IG-98-014)	We found internal control weaknesses in Lewis' hazardous waste manifest process that could prevent the Center from ensuring full regulatory compliance and minimizing its liability when disposing of hazardous waste. The manifest is the key document used to track the waste throughout the disposal process. Center management concurred with our recommendations to strengthen its controls.
AUDITS	Efforts to Eliminate Ozone Depleting Chemicals from Space Shuttle Operations (February 25, 1998)	NASA's Shuttle Program has proactively reduced its use of ODCs by 90 percent by finding replacement substances and processes. Although the Agency has taken positive steps to reduce ODCs, we identified seven areas in which the Agency could improve its control over ODCs. NASA has taken or proposed actions that are responsive to our suggestions.
INVESTIGATIONS	Partnerships with state, local and federal law enforcement agencies targeting environmental crimes.	As a result of a joint investigation by NASA OIG and other federal and state law enforcement agencies, a contractor pled guilty to a criminal information for improperly storing and disposing of hazardous waste. Company paid $6.5 million in fines. The OIG and other agencies are pursuing civil claims.

TABLE 20 – ENVIRONMENTAL ISSUES PLANNED WORK

Program Area	Activity	Focus
AUDITS	Review compliance with the National Environmental Policy Act (NEPA)	Integration of NEPA into NASA's planning: how well is it defined, and Center compliance.
	Review the ramifications of selling hazardous materials to the public (e.g., paint, mercury batteries)	Controls over sales. Prudence of continuing the sales. Protection of NASA's interests
	Evaluate recycling and waste collection efforts at colocated facilities (e.g., NASA/DOD)	Savings of consolidating recycling and waste prevention programs and contracts at colocated facilities.
INVESTIGATIONS	Explore the use of satellite technology to detect environmental crime	Contractor disposition of hazardous materials. Contractor compliance with statutory and contractual requirements.